

## TEACHING FILES (GRAND ROUNDS)

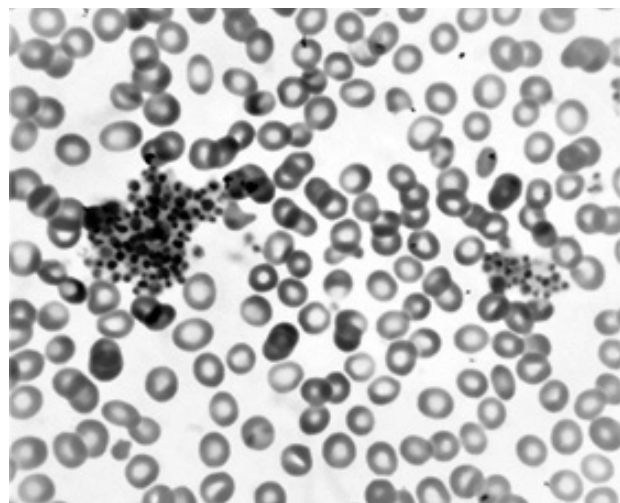
### A QUEER CASE OF THROMBOCYTOPENIA IN A CHILD

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#### Clinical Problem

A 3-years-old male child was hospitalized for right-sided pneumonia. Complete blood count (CBC) showed hemoglobin 13.5 gm/dl, total leucocyte count- 6800 cells/cumm and thrombocytopenia with a platelet count of <20,000 cells/cumm on two occasions. There was no history of easy bruisability, petechiae, ecchymosis or bleeding from any site. There was no history of bleeding disorders in family members. Physical examination was normal. CBC by an automated counter in the hematology lab showed hemoglobin of 13 gm%, total leucocyte counts of 10,500 cells/cumm and platelet counts of 10,000 cells/cumm. A peripheral smear examination showed multiple aggregates of platelets (Figure 1). All previous CBCs were done using ethylenediaminetetraacetic acid (EDTA) as an anticoagulant. When the CBC was repeated with sodium citrate as an anticoagulant, the platelet count was found to be 2,35,000 cells/cumm.

**Figure 1.** Peripheral blood smear (Giemsa stain) (1000x): showing platelet clumps.



*Why did the child have thrombocytopenia on EDTA samples?*

#### Discussion

Pseudothrombocytopenia occurs in up to 0.1% of all CBCs and is usually caused by EDTA-dependent platelet agglutinating antibody.<sup>1,2</sup> Other mechanisms include artifacts of blood collection, monoclonal platelet agglutinin, platelet reactive cold agglutination and

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platelet satellitism where platelets form EDTA dependent rosetting around neutrophils and monocytes.<sup>3</sup> Use of an alternate anticoagulant such as citrate or heparin may be helpful. However, up to 17% of patients with EDTA dependent pseudothrombocytopenia also show this phenomenon with citrate.<sup>4</sup> This condition is clinically benign and is not associated with any pathological significance.<sup>5</sup> Accurate diagnosis of pseudothrombocytopenia is necessary as unrecognized spurious thrombocytopenia causes significant health expenditure and discomfort to the patients. Unnecessary clinical concern leads to inappropriate therapy such as blood transfusions and withholding of surgical procedures.<sup>4</sup> Measurement of platelet counts by modern automated analyzers is more accurate and economical, however, platelet clump "flag" on the CBC must prompt a thorough peripheral blood smear examination.<sup>5</sup>

This case underlines the importance of routine peripheral blood smear examination and appropriate interpretation of platelet histogram.

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#### Compliance with Ethical Standards

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**Conflict of Interest:** None

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